

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application. Please cancel claims 1-37, without prejudice, and replace with new claims 117-125 as follows:

- 1 117. (New) An automated storage and retrieval apparatus for storing containers
2 at ultra low temperatures, said apparatus comprising:
3 a freezer compartment, said freezer compartment having a side wall;
4 a storage carousel disposed inside said freezer compartment for holding the
5 containers;
6 a climate-controlled chamber disposed on said side wall;
7 a climate system for controlling the climate of said chamber;
8 an interchange mechanism disposed inside said freezer compartment configured
9 to:
10 interchange a container between said interchange mechanism and said
11 climate-controlled chamber while in a chamber exchange position,
12 and
13 interchange a container between said interchange mechanism and said
14 carousel while in a carousel exchange position;
15 said chamber being configured to:
16 isolate the container from said interchange mechanism as container is
17 deposited from the exterior or placed into the exterior, and
18 isolate the container from the exterior as container is exchanged between
19 said chamber and said interchange mechanism; and
20 a translating mechanism disposed in said freezer compartment configured to align
21 said interchange mechanism with said carousel and/or configured to align
22 said interchange mechanism with at least one more carousel located in said
23 freezer compartment.
- 1 118. (New) The apparatus of claim 117, wherein said translating mechanism
2 comprises at least one of track device, wheel system, conveyor system, pulley system,
3 suspension device, belt system, gear system, or robotic device.

1 119. (New) An automated storage and retrieval apparatus for storing containers
2 at ultra low temperatures, said apparatus comprising:
3 a freezer means for freezing the containers;
4 a storage means disposed inside said freezer means for holding the containers;
5 a chamber means for interchanging the containers between the exterior and said
6 freezer means;
7 a climate system control means for controlling the climate of said chamber means;
8 an interchange means disposed inside said freezer compartment for:
9 interchanging a container between said interchange means and said
10 chamber means while in a chamber exchange position, and
11 interchanging a container between said interchange means and said storage
12 means while in a storage exchange position;
13 said chamber means for:
14 isolating the container from said interchange means as container is
15 deposited from the exterior or placed into the exterior, and
16 isolating the container from the exterior as container is exchanged between
17 said chamber means and said interchange means; and
18 a translating means disposed in said freezer means configured to align said
19 interchange means with said storage means and/or configured to align said
20 interchange mechanism with at least one more storage means located in
21 said freezer means.

1 120. (New) An automated storage and retrieval apparatus for storing containers
2 at ultra low temperatures, said apparatus comprising:
3 a freezer compartment, said freezer compartment having a side wall;
4 a storage device disposed inside said freezer compartment for holding the
5 containers;
6 a climate-controlled chamber disposed on said side wall;
7 a climate system for controlling the climate of said chamber;
8 an interchange mechanism disposed inside said freezer compartment configured
9 to:

10 interchange a container between said interchange mechanism and said
11 climate-controlled chamber while in a chamber exchange position,
12 and
13 interchange a container between said interchange mechanism and said
14 storage device while in a device exchange position; and
15 said chamber being configured to:
16 isolate the container from said interchange mechanism as container is
17 deposited from the exterior or placed into the exterior, and
18 isolate the container from the exterior as container is exchanged between
19 said chamber and said interchange mechanism; and
20 a translating device disposed in said freezer compartment configured to
21 align said interchange device with said storage device and/or
22 configured to align said interchange device with at least one more
23 storage device located in said freezer compartment.

1 121. (New) A method for automatically depositing and storing containers in a
2 freezer compartment at ultra low temperatures, said method comprising:
3 providing a first carousel in said freezer compartment;
4 providing an interchange mechanism disposed inside said freezer compartment;
5 depositing a container into a climate-controlled chamber;
6 controlling the climate of said chamber while isolating said chamber for a
7 predetermined time while the container remains in said chamber;
8 retrieving the container from said chamber to said freezer compartment with said
9 interchange mechanism while said chamber is isolated from the exterior,
10 and
storing the container in said first carousel and/or translating the container to at
least one other carousel for storage also located in said freezer
compartment.

1 122. (New) A method for automatically storing and retrieving containers in a
2 freezer compartment at ultra low temperatures, said method comprising:
3 providing a first carousel in said freezer compartment;

4 providing an interchange mechanism disposed inside said freezer compartment;
5 providing a climate controlled chamber;
6 retrieving a stored container from said first carousel into said climate controlled
7 chamber with said interchange mechanism, while said chamber is isolated
8 from the exterior;
9 controlling the climate of said chamber while isolating said chamber for a
10 predetermined time while the container remains in said chamber; and
11 presenting the container for pickup while said chamber is isolated from said
12 freezer compartment;
13 providing a second carousel in said freezer compartment;
14 retrieving a second stored container from said second carousel with said
15 interchange mechanism; and
16 translating said interchange mechanism with the second container therein.

1 123. (New) The method of claim 122, further comprising:
2 translating said interchange mechanism with the second container therein; and
3 transferring the second container from said interchange mechanism into said
4 climate controlled chamber, while said chamber is isolated from the
5 exterior.

1 124. (New) The method of claim 123, further comprising:
2 controlling the climate of said chamber while isolating said chamber for a
3 predetermined time while the second container remains in said chamber;
4 and
5 presenting the second container for pickup while said chamber is isolated from
6 said freezer compartment.

1 125. (New) The method of claim 122, further comprises:
2 translating said interchange mechanism with the second container therein, wherein
3 after translating said interchange mechanism, said method further
4 comprises:

5 transferring the second stored container from said interchange mechanism
6 into to said first carousel or other carousel or storage device also
7 located in said freezer compartment.